

File 797023

552 - OD-271

PROPOSAL TO REDUCE IMAGE COLOR

in
552 VIEWER

The purpose of this proposal is to submit Work Statement and costs necessary to reduce image and dot reticle color introduced by dichroic used to reflect film marking information onto viewing optical axis in the Point Mark Optics of [REDACTED] Model 552 Point Transfer Device.

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Two changes to equipment will be required to accomplish this improvement: Change laser wavelength from 6943 Å to 10600 Å and recoat beam splitter with two thin film systems for laser and dot reticle reflection; respectively. By shifting laser wavelength to 10600 Å the reflection of visible light wavelengths is reduced and therefore, minimizing upset of image color balance. Although there is a reflection band at 1/3 laser wavelength, 3530 Å, its effect on image color is expected to be much less than with present dichroic film.

In addition, dot reticle will appear far less red because dot image will be reflected by a thin metal film reflecting all visible light wavelength fairly uniformly, not by a dichroic coating.

Changing laser wavelength will be primarily done by exchanging present ruby crystal for a neodymium doped glass rod (Kodak NS-10a) and rebuilding laser head to cool and shield glass rod more efficiently than present configuration. Output with present pumping lamp and cavity is expected to increase slightly, allowing longer flashtube life at current laser output levels. Greater output may be useful on the less dense film areas. In

addition, since glass laser rods have a lower threshold than does ruby, a wider range output adjustment will be possible.

Marking effects of longer wavelengths have not been studied nor experimented, but little change is anticipated. All of the above changes can be effected in a month or less, and except for laser head cooling change, are mechanically exchangeable with a small amount of adjustment required. Field replacement is possible, but there is some experimental work required to examine laser cooling and output, and effects wavelength change.